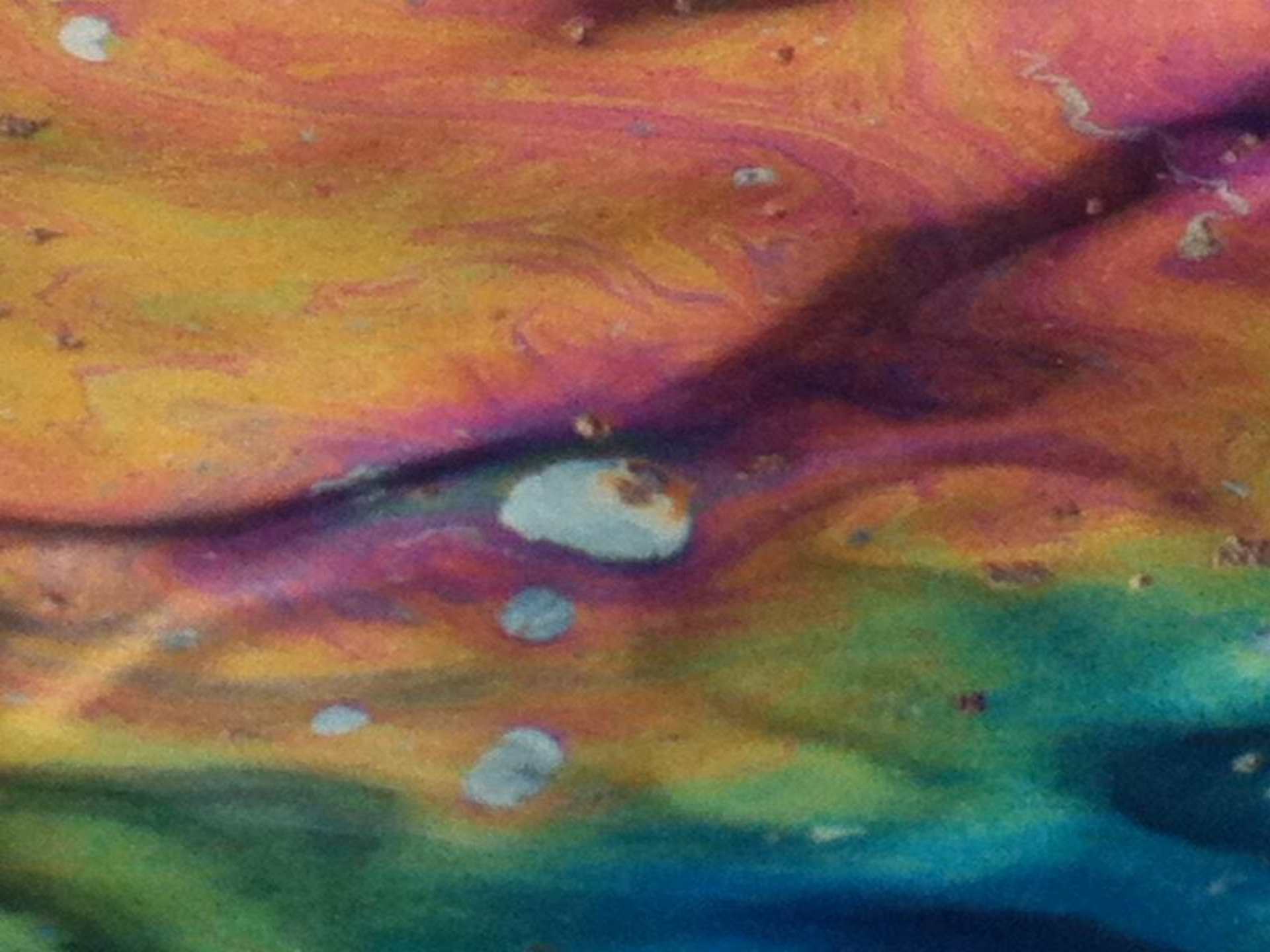


HUNDREDS OF OILED BIRDS DIE FROM NATURAL OIL SEEPS EACH YEAR

Oiled Grebe Tries to Preen
Photo © Ingrid Taylar

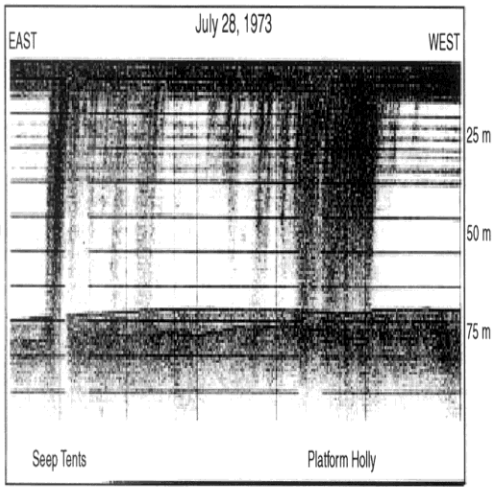
Grebes and other diving birds and ducks, struggle to preen the oil off of their feathers.

Unless captured and washed, oiled birds eventually succumb to cold, hunger and weakness -- as well as toxicity from ingesting the oil as they groom.

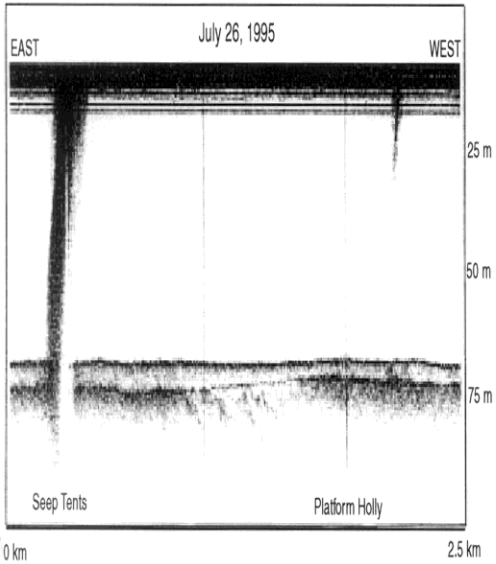
SOURCE: US COAST GUARD AND THE CALIFORNIA DEPARTMENT OF FISH & GAME'S OFFICE OF SPILL PREVENTION AND RESPONSE

Sonar Profiles of Seepage along sea floor at and near Platform Holly

Sonar Profile from July 28th, 1973



July 26th, 1995 – after 20 years of pressure extraction



Source: *Geology* November 1999; v. 27; no. 11; p. 1047–50

"Both oil and gas are coming out," explained Ira Leifer, a scientist with UCSB's Marine Science Institute. "We can measure the amount of gas with sonar because the sonar's sound bounces off the bubbles. We also measure how much oil is escaping with the gas.
UCSB Study, Jan. 2005

80% Seep Reduction

UCSB UNIVERSITY OF CALIFORNIA, SANTA BARBARA

PRESS RELEASE: November 18, 1999

- **Peer Reviewed Studies- November 1999 Geology Magazine & Journal of Geophysical Research- Oceans**
- **“Natural seepage of hydrocarbons from the ocean floor… has been significantly reduced by oil production.”**
- **“Studies of the area around Platform Holly show a 50% decrease in natural seepage over 22 years”**
- **If oil was pumped out of the La Goleta Seep, researchers state that there would be “a reduction in non-methane hydrocarbon emission rates equivalent to removing half of the on-road vehicle traffic from Santa Barbara County. In addition, a 50 percent reduction in seepage from the La Goleta seep would remove about 25 barrels of oil per day from the sea surface, which in turn would result in a 15 percent reduction in the amount of tar found on Santa Barbara beaches."**

[excerpts from www.ia.ucsb.edu/pa/display.aspx?pkey=412

“More oil is released every week from natural seeps at Coal Oil Point than has escaped from offshore operations in all of California over the past thirty-five years”

Public Affairs Office of the Minerals Management Service

Principal Economic Benefits of Future Oil and Gas Production in Santa Barbara County

Mark Schniepp
Director

California Economic Forecast

October 31, 2008

Final words

- Potential Oil and Gas Reserves in the offshore tidelands of SB County are substantial
- These resources, if produced, could provide windfall revenues to the County General Fund and local schools
- The sum of potential property tax receipts and royalty revenues in peak years of production would finance 40 percent of all county general fund expenditures
- At a time that the industrial base has declined, a new economic engine is needed in the county

Donald Bren School of Environmental Science & Management

Marine Hydrocarbon Seep Capture

Feasibility and Potential Impacts
Santa Barbara, California

Seep Environment

biogeochemistry & ecology

- Seeps release between 80,000 to 200,000 m^3 of gas per day

Seep Environment

air quality

- Primary component is methane
  - Contributes to global warming
- Seep gas contains reactive organic gases (ROGs)

$$ROG + NO_X \xrightarrow{h\nu} O_3$$

- Ozone (O_3) is a serious health concern

Significance

1. Capturing natural seep hydrocarbons might reduce local air pollution

2. Recent CA energy crisis renewed interest in capturing this seepage as a potential "green" source of natural gas

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- Mel Willis (Ph.D. student advisor)
- Peter Cantle (SBCAPCD)
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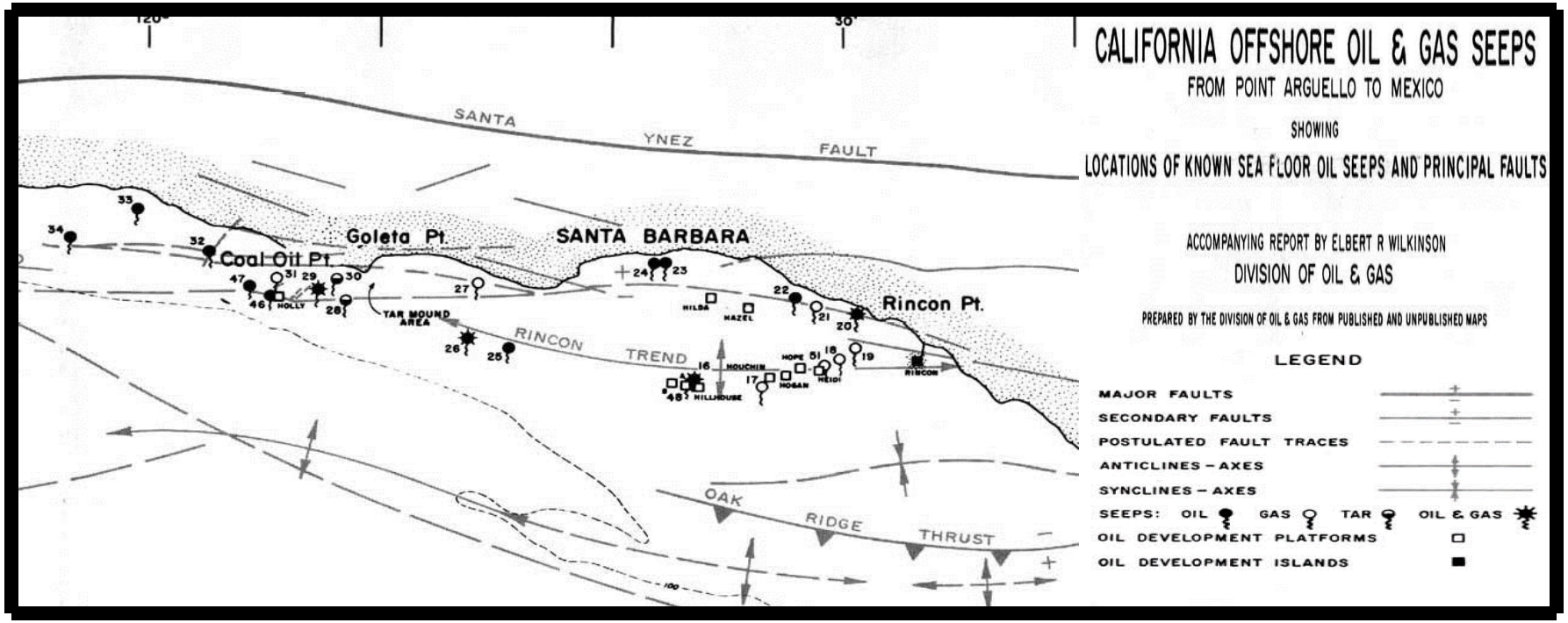
- Tom Murphy, Doug Allard, Patricia Holden, Mike Edwards, Steve Sterner, Michelle Pasini, Jim Fredrickson, Sally Holbrook

SB CHANNEL SEEPS + FAULT LINES



2,000 active natural seeps lie below fault lines along California Coast. Seeps occur all along Santa Barbara County Coastline

Earthquakes can also expand sea floor fissures, releasing unpredictable quantities of trapped oil